

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Shoichi SASAKI

Application No.: Reissue of U.S. Patent No. 5,914,575
Issued June 22, 1999

Filed: June 21, 2001

Docket No.: 039628.99

For: POWER OUTPUT APPARATUS AND METHOD OF CONTROLLING THE SAME

PRELIMINARY AMENDMENT

Director of the U.S. Patent and Trademark Office
Washington, D. C. 20231

Sir:

Prior to taking the above-identified application up for examination, please amend
the application as follows:

IN THE CLAIMS:

Please replace claims 3, 5, 8, 9, 14, 17 and 19 as follows:

3. (Amended) A power output apparatus [in accordance with claim 1,] for
outputting power to a drive shaft, said power output apparatus comprising:

an engine having an output shaft;

a motor having a rotating shaft and inputting and outputting power to and
from said rotating shaft;

three shaft-type power input/output means having three shafts respectively
linking said engine and said drive shaft, said three shaft-type power input/output means

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inputting and outputting power to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

storage battery means for supplying and receiving an electrical energy required for inputting and outputting power to and from said motor; and

braking control means for controlling said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft, wherein said braking control means comprises means for enabling said motor to carry out a power operation, thereby applying a braking force to said drive shaft.

5. (Amended) A power output apparatus [in accordance with claim 1.] for outputting power to a drive shaft, said power output apparatus comprising:

an engine having an output shaft;

a motor having a rotating shaft and inputting and outputting power to and from said rotating shaft;

three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, said three shaft-type power input/output means inputting and outputting power to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

storage battery means for supplying and receiving an electrical energy required for inputting and outputting power to and from said motor; and

braking control means for controlling said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft, wherein said braking control means comprises means for locking up said motor.

8. (Amended) A power output apparatus [in accordance with claim 7, wherein said braking control means comprises] for outputting power to a drive shaft, said power output apparatus comprising:

an engine having an output shaft;

a motor having a rotating shaft and inputting and outputting power to and from said rotating shaft;

three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, said three shaft-type power input/output means inputting and outputting power to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

storage battery means for supplying and receiving an electrical energy required for inputting and outputting power to and from said motor;

braking control means for controlling said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft;

a second motor for inputting and outputting power to and from said drive shaft, in addition to said motor working as a first motor, wherein said storage battery means comprises means for supplying and receiving an electrical energy required for inputting and outputting power to and from said second motor; and

charging state detection means for detecting the charging state of said storage battery means, wherein said braking control means comprises means for controlling said engine, said first motor, and said second motor based on the charging state of said storage battery means detected by said charging state detection means, thereby applying a braking force to said drive shaft, and means for regulating the charging state of

said storage battery means detected by said charging state detection means to be within a predetermined range.

9. (Amended) A power output apparatus [in accordance with claim 6, wherein said braking control means comprises] for outputting power to a drive shaft, said power output apparatus comprising:

an engine having an output shaft;

a motor having a rotating shaft and inputting and outputting power to and from said rotating shaft;

three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, said three shaft-type power input/output means inputting and outputting power to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

storage battery means for supplying and receiving an electrical energy required for inputting and outputting power to and from said motor;

braking control means for controlling said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft; and

a second motor for inputting and outputting power to and from said drive shaft, in addition to said motor working as a first motor, wherein said storage battery means comprises means for supplying and receiving an electrical energy required for inputting and outputting power to and from said second motor, and said braking control means comprises means for controlling said engine, said first motor, and said second motor, in order to enable a braking force to be applied to said drive shaft, and means for controlling said second motor in order to enable said second motor to apply a braking force

to said drive shaft, while controlling said first motor in order to make power input to and output from said first motor equal to zero.

14. (Amended) A power output apparatus [in accordance with claim 6, wherein said braking control means comprises] for outputting power to a drive shaft, said power output apparatus comprising:

an engine having an output shaft;

a motor having a rotating shaft and inputting and outputting power to and from said rotating shaft;

three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, said three shaft-type power input/output means inputting and outputting power to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

storage battery means for supplying and receiving an electrical energy required for inputting and outputting power to and from said motor;

braking control means for controlling said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft; and

a second motor for inputting and outputting power to and from said drive shaft, in addition to said motor working as a first motor, wherein said storage battery means comprises means for supplying and receiving an electrical energy required for inputting and outputting power to and from said second motor, and said braking control means comprises means for controlling said engine, said first motor, and said second motor, in order to enable a braking force to be applied to said drive shaft, and means for controlling said first motor and said second motor, in order to enable an electrical energy

regenerated by said second motor to be identical with an electrical energy consumed by said first motor.

17. (Amended) A power output apparatus [in accordance with claim 16, wherein said braking control means comprises] for outputting power to a drive shaft, said power output apparatus comprising:

an engine having an output shaft;

a motor having a rotating shaft and inputting and outputting power to and from said rotating shaft;

three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, said three shaft-type power input/output means inputting and outputting power to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

storage battery means for supplying and receiving an electrical energy required for inputting and outputting power to and from said motor;

braking control means for controlling said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft;

a second motor for inputting and outputting power to and from said output shaft of said engine, in addition to said motor working as a first motor, wherein said storage battery means comprises means for supplying and receiving an electrical energy required for inputting and outputting power to and from said second motor;

charging state detection means for detecting the charging state of said storage battery means, wherein said braking control means comprises means for controlling said engine, said first motor, and said second motor in order to enable a

braking force to be applied to said drive shaft based on the charging state of said storage battery means detected by said charging state detection means, and means for regulating the charging state of said storage battery means detected by said charging state detection means to be within a predetermined range.

19. (Amended) A power output apparatus [in accordance with claim 15, wherein said braking control means comprises] for outputting power to a drive shaft, said power output apparatus comprising:

an engine having an output shaft;

a motor having a rotating shaft and inputting and outputting power to and from said rotating shaft;

three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, said three shaft-type power input/output means inputting and outputting power to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

storage battery means for supplying and receiving an electrical energy required for inputting and outputting power to and from said motor;

braking control means for controlling said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft; and

a second motor for inputting and outputting power to and from said output shaft of said engine, in addition to said motor working as a first motor, wherein said storage battery means comprises means for supplying and receiving an electrical energy required for inputting and outputting power to and from said second motor, and said braking control means comprises means for controlling said engine, said first motor, and

said second motor, in order to enable a braking force to be applied to said drive shaft, and means for controlling said first motor and said second motor, in order to enable an electrical energy regenerated by said second motor to be identical with an electrical energy consumed by said first motor.

Please add new claims 22-25 as follows:

--22. A power output apparatus for outputting power to a drive shaft, said power output apparatus comprising:

an engine having an output shaft;

a motor having a rotating shaft and inputting and outputting power to and from said rotating shaft;

three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, said three shaft-type power input/output means inputting and outputting power to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

storage battery means for supplying and receiving an electrical energy required for inputting and outputting power to and from said motor; and

braking control means for controlling said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft;

a remaining charge detection means that detects the remaining charge of the storage battery means; and

an engine driving means that drives said engine in a predetermined operating condition, which enables said motor to regenerate electric power, when the remaining charge of the battery is less than a predetermined threshold value.--

--23. A method of controlling a power output apparatus, for outputting power to a drive shaft, having an engine with an output shaft, a motor with a rotating shaft, and a three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, the method comprising:

inputting and outputting power to and from said rotating shaft;

inputting and outputting power, via the three shaft-type power input/output means, to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

supplying and receiving an electrical energy, from a storage battery means, required for inputting and outputting power to and from said motor;

controlling, using a braking controlling means, said engine and said motor, based on a charging state of said storage battery means, in order to enable a braking force to be applied to said drive shaft, and

enabling said motor to carry out a power operation, thereby applying a braking force to said drive shaft by means of said braking control means.--

--24. A method of controlling a power output apparatus, for outputting power to a drive shaft, having an engine with an output shaft, a motor with a rotating shaft, and three shaft-type power input/output means having three shafts respectively linking said engine and said drive shaft, a second motor, the method comprising:

inputting and outputting power to and from said rotating shaft;

inputting and outputting power, via said three shaft-type power input/output means, to and from a residual one shaft, based on predetermined powers input to and output from any two shafts among said three shafts;

supplying and receiving an electrical energy, from a storage battery means,
required for inputting and outputting power to and from said motor;

controlling, using a braking control means, said engine and said motor,
based on a charging state of said storage battery means, in order to enable a braking force
to be applied to said drive shaft;

inputting and outputting power to and from said drive shaft via the second
motor, in addition to said motor working as a first motor;

supplying and receiving an electrical energy, from said battery storage
means, required for inputting and outputting power to and from said second motor;

detecting the charging state of said storage battery means;

controlling, via said braking control means, said engine, said first motor,
and said second motor based on the detected charging state of said storage battery means,
to thereby apply a braking force to said drive shaft; and

regulating the charging state of said storage battery means to be within a
predetermined range.--

--25. A method of controlling a power output apparatus, for outputting power to
a drive shaft, having an engine with an output shaft, a motor with a rotating shaft, a second
motor, and three shaft-type power input/output means having three shafts respectively
linking said engine and said drive shaft, said method comprising:

inputting and outputting power to and from said rotating shaft;

inputting and outputting power, via said three shaft-type power input/output
means, to and from a residual one shaft, based on predetermined powers input to and
output from any two shafts among said three shafts;

supplying and receiving an electrical energy, from a storage battery means,
required for inputting and outputting power to and from said motor;

controlling, using a braking control means, said engine and said motor,
based on a charging state of said storage battery means, in order to enable a braking force
to be applied to said drive shaft;

inputting and outputting power, from a second motor, to and from said
output shaft of said engine, in addition to said motor working as a first motor;

supplying and receiving an electrical energy, from said storage battery
means, required for inputting and outputting power to and from said second motor;

controlling said engine, said first motor, and said second motor, using the
braking control means, in order to enable a braking force to be applied to said drive shaft;

detecting a charging state of said storage battery means using a charging
state detection means, wherein controlling said engine, said first motor, and said second
motor is based on the charging state of said storage battery means detected by said
charging state detection means; and

regulating the charging state of said storage battery means detected by said
charging state detection means to be within a predetermined range.--

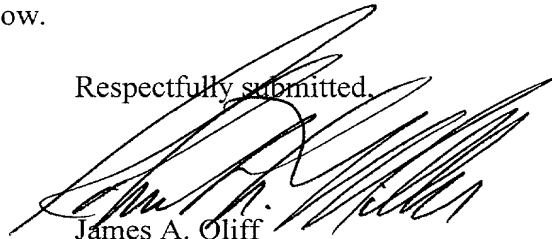
REMARKS

Claims 1-25 are pending. Claims 3, 5, 8, 9, 14, 17 and 19 are amended and claims 22-25 are added. Claim 3 is a combination of claims 1 and 3; claim 5 is a combination of claims 1 and 5; claim 8 is a combination of claims 1, 6, 7 and 8; claim 9 is a combination of claims 1, 6 and 9; claim 14 is a combination of claims 1, 6 and 14; claim 17 is a combination of claims 1, 15, 16 and 17; and claim 19 is a combination of claims 1, 15 and 19. Added claim 22 is directed to the subject matter of Figure 30; col. 27, line 51

to col. 29, line 44. Claims 23-25 are method claims corresponding to amended claims 3, 8 and 17. Thus, all claims are supported by the specification.

It is respectfully requested that the Amendment be entered prior to taking the above-identified application up for examination. If the Examiner has any questions regarding this application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Robert A. Miller
Registration No. 32,771

JAO:RAM/kap

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OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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